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| 10/824,229 | 04/14/2004 | Keishi Inoue | 09792909-5867 | 6345 |
| 26263 | 7590 | 03/08/2007 | EXAMINER | |
| SONNENSCHEIN NATH & ROSENTHAL LLP | | | DOAN, THERESA T | |
| P.O. BOX 061080 | | | ART UNIT | PAPER NUMBER |
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| CHICAGO, IL 60606-1080 | | | | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | | DELIVERY MODE | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | |
|------------------------------|-----------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/824,229 | INOUE, KEISHI |
| | Examiner Theresa T. Doan | Art Unit 2814 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 21 December 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 7 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed on 12/21/06 has been acknowledged. By this amendment, claims 6-7 are withdrawn and claims 1-5 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The amendment limitation of "...or a SiO₂ film containing fluorine", as recited in claims 1 and 4, is not supported in the original disclosure.

Claims 2-3 and 5 are also rejected because dependent claims, which are dependent on claims 1 and 4.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 4-5 are rejected under 35 U.S.C. 102(a) as being anticipated by Admitted Prior Art (APA).

Regarding claim 4, APA (Fig. 10) discloses a semiconductor device comprising: a substrate 1; a first insulation film 2 formed on the substrate 1; a first conductive layer 3 formed on the substrate 1 with the first insulation film 2 positioned between the substrate 1 and the first conductive layer 3; a second conductive layer 4 formed on the substrate 1 at a predetermined distance from the first conductive layer 3; a second insulation film 6 formed on upper surfaces of the first and second conductive layers (3,4) and having a plurality of first opening portions 7 to expose one end portion of the first conductive layer 3 or of the second conductive layer 4; and a third conductive layer 8 formed on an upper surface of the second insulation film 6 in such a manner to fill up the opening portions 7 for making electrical connection between the first and second conductive layer (3,4); wherein the third conductive layer 8 has a predetermined wiring length to maintain the connection, and has the electrical connection between the first and second conductive layer (3,4) at both ends of the third conductive layer 8 by way of the opening portions 7, and the second insulation film 6 is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine (see paragraph [0007] lines 4-7). It is noted that where the claimed and prior art products are identical or substantially identical in structure or composition or are produced by identical or substantially identical processes, claimed

properties or functions are presumed to be inherent. In re Best, 195 USPQ 430, 433 (CCPA 1977). Therefore, if the prior art teaches the identical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). In this case, the third conductive layer 8 would inherently have properties of maintaining the connection even if the length of the third conductive layer in a direction of longer length changes due to thermal expansion or contraction as claimed.

Regarding claim 5, APA discloses that the third conductive layer, which is formed by a conductive material containing copper (paragraph [0004], lines 5-16).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (APA) in view of Watanabe et al. (U.S. Pub. 20030116852).

Regarding claim 1, APA (Fig. 10) discloses a semiconductor device comprising: a substrate 1; a first insulation film 2 formed on the substrate 1; a first conductive layer 3 formed on the substrate 1 with the first insulation film 2 positioned between the

substrate 1 and the first conductive layer 3; a second conductive layer 4 formed on the substrate 1 at a predetermined distance from the first conductive layer 3; a second insulation film 6 formed on upper surfaces of the first and second conductive layers (3,4) and having a plurality of first opening portions 7 to expose either the first conductive layer 3 or the second conductive layer 4; and a third conductive layer 8 formed on an upper surface of the second insulation film 6 in such a manner to fill up the first opening portions 7 for making electrical connection between the first and second conductive layer (3,4) by way of the first opening portions 7, and the second insulation film 6 is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine (see paragraph [0007] lines 4-7).

APA does not disclose one or more second opening portions to expose the first insulating film 2.

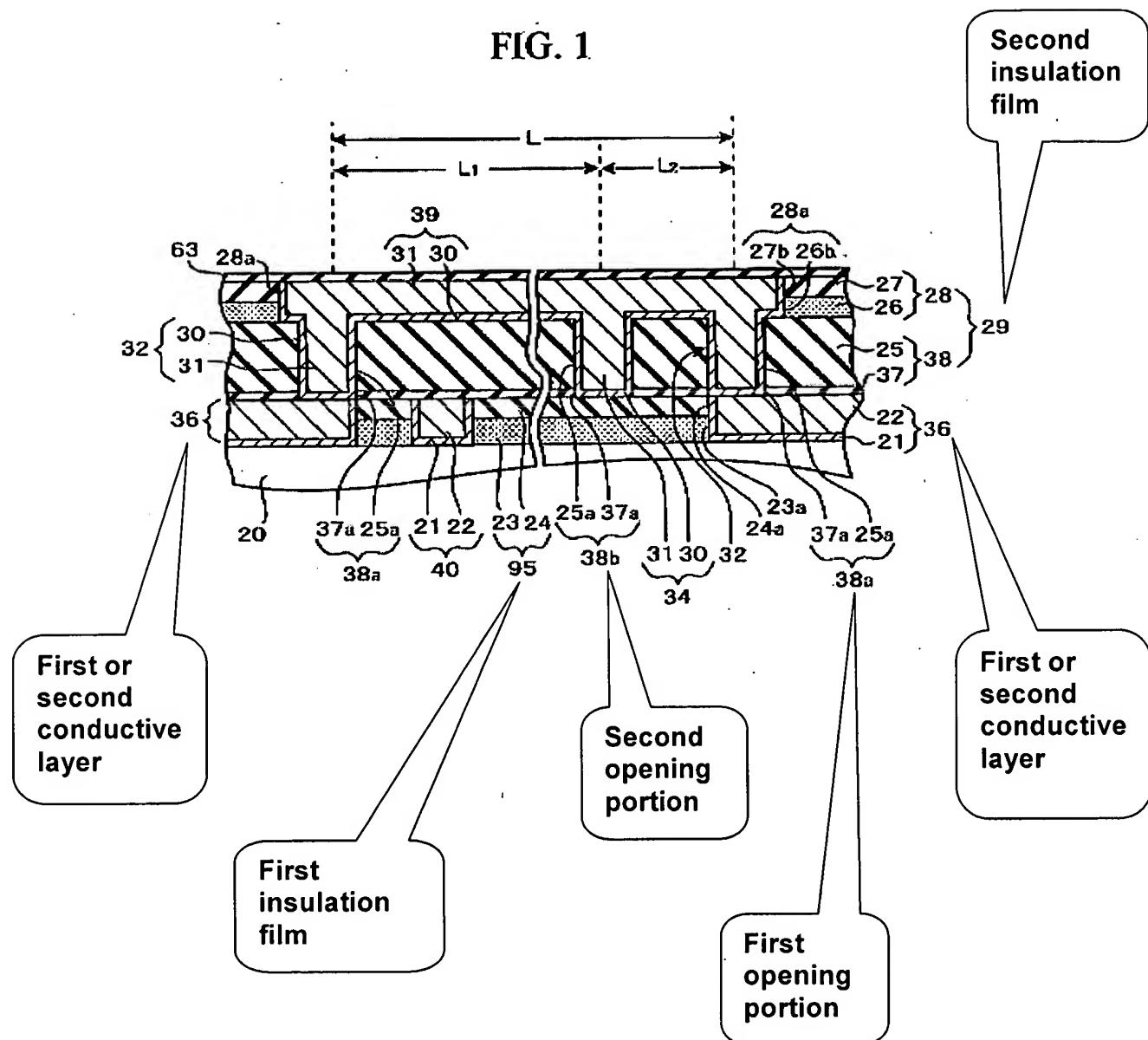
However, Watanabe (Fig. 1) discloses a semiconductor device comprising: a first insulation film 95 formed on the substrate 20 (paragraph [0061], lines 6-11); a first conductive layer 36 formed on the substrate 20 (See Fig. 1 Labeled by Examiner below and paragraph [0064], lines 2-4); a second conductive layer 36 formed on the substrate 20 (paragraph [0064], lines 2-4); a second insulation film 29 (paragraph [0066]) formed on upper surfaces of the first and second conductive layers 36 and having a plurality of first opening portions (28a,38a) (paragraph [0067], lines 1-2) to expose either the first conductive layer 36 or the second conductive layer 36 and one or more second opening portions 38b to expose neither the first conductive layer nor second conductive layer 36

and expose the first insulating film 95; and a third conductive layer 31 (paragraph [0068], lines 7-8) formed on an upper surface of the second insulation film 29 in such a manner to fill up the first opening portions (28a,38a) and the second opening portions 38b for making electrical connection between the first and second conductive layer 36 by way of the first opening portions (28a,38a); wherein the second opening portions 38b are formed between a pair of the first opening portions (28a,38a) along the third conductive layer 31 (See Fig. 1 Labeled by the Examiner below) in order to provide a semiconductor device whose stress migration resistance (paragraph [0018]). Accordingly, it would have been obvious to modify the device of APA by forming one or more second opening portions to expose the first insulating film because such a forming one or more second opening portions to expose the first insulating film would provide a semiconductor device whose stress migration resistance, as taught by Watanabe (paragraph [0018]).

Regarding claim 2, as discussed above, Watanabe further discloses that the second opening portions 38b are formed at a predetermined distance between the first opening portions (28a,38a).

Regarding claim 3, APA discloses that the third conductive layer, which is formed by a conductive material containing copper (paragraph [0004], lines 5-16).

FIG. 1



Response to Arguments

8. Applicant argues that APA fails to teach or suggest the second insulation film, which is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine as claimed.

This argument is not persuasive because APA discloses the second insulation film 6 is formed by a low dielectric constant material having a lower Young's modulus than that of a SiO₂ film or a SiO₂ film containing fluorine (see paragraph [0007] lines 4-7). In addition, the amendment limitation of "...or a SiO₂ film containing fluorine", as recited in claims 1 and 4, is not supported in the original disclosure.

The rest of applicant's arguments have been addressed to the amended claims are considered in the rejections shown above.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Theresa T. Doan whose telephone number is (571) 272-1704. The examiner can normally be reached on Monday to Friday from 7:00AM - 3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD
August 30, 2006.

Theresa Doan
THERESA DOAN
PRIMARY PATENT EXAMINER